IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | | |
|---|---|---|
| In re Application of: James Kenneth Aragones et al. | § | Group Art Unit: 2123 |
| Serial No.: 09/682,314 | § | Examiner: Craig, Dwin M. |
| Filed: August 17, 2001 | § | |
| For: SYSTEM, METHOD AND COMPUTER PRODUCT FOR BASELINE MODELING A PRODUCT OR PROCESS | § | Atty. Docket: RD28217-1/YOD GERD:0523 |

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING
37 C.F.R. 1.8

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date below:

October 24, 2006 — Lynda Howell
Date

# APPEAL BRIEF PURSUANT TO 37 C.F.R. §§ 41.31

This Appeal Brief is being filed in furtherance to the Notice of Appeal mailed on July 18, 2006, and received by the Patent Office on July 24, 2006.

Appellants hereby request a one (1) month extension in the statutory period for response to the Office Action from September 24, 2006 to October 24, 2006 in accordance with 37 C.F.R. § 1.136. The Commissioner is authorized to charge the requisite fee of $120.00, and any additional fees which may be required, to Deposit Account No. 07-0868; Order No. RD28217-1/YOD (GERD:0523).

The Commissioner is also authorized to charge the requisite fee of $500.00, and any additional fees, which may be necessary to advance prosecution of the present application, to Account No. 07-0868, Order No. RD28217-1/YOD (GERD:0523).

## 1. REAL PARTY IN INTEREST

The real party in interest is General Electric Company, the Assignee of the above-referenced application by virtue of the Assignment to General Electric Company by James K. Aragones, Jeffery W. Stein, Jeremiah F. Donoghue, and Ronald G. Maruscik, recorded at Reel 012037, Frame 0790, and dated August 17, 2001. Accordingly, General Electric Company will be directly affected by the Board's decision in the pending appeal.

## 2. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any other appeals or interferences related to this Appeal. The undersigned is Appellants' legal representative in this Appeal.

## 3. STATUS OF CLAIMS

Claims 1-93 are currently pending, are currently under final rejection and, thus, are the subject of this Appeal.

## 4. STATUS OF AMENDMENTS

The Appellants have not submitted any amendments subsequent to the Final Office Action mailed on March 15, 2006. Consequently, there are no outstanding amendments to be considered by the Board.

## 5. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates generally to improving the quality and productivity of a product or process. *See* Application, page 1, paragraph 1. More particularly, in certain embodiments, the invention relates to baseline modeling of a product or process. *See id.*

The Application contains eighteen independent claims, namely, claims 1, 9, 15, 18, 19, 22, 30, 36, 39, 40, 46, 54, 60, 63, 64, 70, 78 and 86, all of which are the subject of this Appeal. The subject matter of these claims is summarized below.

With regard to the aspect of the invention set forth in independent claim 1, discussions of the recited features of claim 1 can be found at least in the below cited locations of the specification and drawings. Claim 1 recites a system (*e.g.*, 10) for performing engine baseline modeling. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1 – 9; *see also* FIG. 1. The system (*e.g.*, 10) includes an engine service database (*e.g.*, 30) that contains engine data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The system (*e.g.*, 10) further includes a preprocessor (*e.g.*, 32) for processing the engine data into a predetermined format. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The system (*e.g.*, 10) also includes an engine baseline modeling component (*e.g.*, 34) that builds an engine baseline model from the preprocessed data, wherein the engine baseline model relates engine performance variables as a function of engine operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; at page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 9, discussions of the recited features of claim 9 can be found at least in the below cited locations of the specification and drawings. Claim 9 recites a system (*e.g.*, 10) for performing engine baseline modeling. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The system (*e.g.*, 10) includes an engine service database (*e.g.*, 30) that contains engine data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The system (*e.g.*, 10) further includes a preprocessor (*e.g.*, 32) for processing the engine data into a predetermined format. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The system (*e.g.*, 10) also includes an

engine baseline modeling component (*e.g.*, 34) that builds an engine baseline model from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3. The system (*e.g.*, 10) further includes a model diagnostics component (*e.g.*, 36) that evaluates the performance of the engine baseline model. *See, e.g., id.* at page 10, lines 27–28; page 11, lines 1–21; and page 12, lines 24–27; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 15, discussions of the recited features of claim 15 can be found at least in the below cited locations of the specification and drawings. Claim 15 recites a system (*e.g.*, 10) for performing engine baseline modeling of an aircraft engine. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The system (*e.g.*, 10) includes an engine service database (*e.g.*, 30) that contains aircraft engine data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The system (*e.g.*, 10) further includes a preprocessor (*e.g.*, 32) for processing the aircraft engine data into a predetermined format, wherein the preprocessor corrects the aircraft engine data to standard conditions derived for an aircraft engine. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The system (*e.g.*, 10) also includes an engine baseline modeling component (*e.g.*, 34) that builds an engine baseline model from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3. The system (*e.g.*, 10) further includes a model diagnostics component (*e.g.*, 36) that evaluates the performance of the engine baseline model. *See, e.g., id.* at page 10, lines 27–28; page 11, lines 1–21; and page 12, lines 24–27; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 18, discussions of the recited features of claim 18 can be found at least in the below cited locations of the specification and drawings. Claim 18 recites a system (*e.g.*, 10) for performing engine baseline modeling of an aircraft engine. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The system (*e.g.*, 10) includes an engine service database (*e.g.*, 30) that contains aircraft engine data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The system (*e.g.*, 10) further includes a preprocessor (*e.g.*, 32) for processing the aircraft engine data into a predetermined format, wherein the preprocessor corrects the aircraft engine data to standard conditions derived for an aircraft engine. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28, and page 12, lines 1–6; *see also* FIGS. 2 and 3. The system (*e.g.*, 10) also includes an engine baseline modeling component (*e.g.*, 34) that builds an engine baseline model from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3. The engine baseline modeling component (*e.g.*, 34) includes a metric component (*e.g.*, 44) to validate the engine baseline model. *See, e.g., id.* at page 10, and lines 10–18; and page 12, lines 12–19; *see also* FIGS. 2 and 3. The system (*e.g.*, 10) further includes a model diagnostics component (*e.g.*, 36) that evaluates the performance of the engine baseline model. *See, e.g., id.* at page 10, lines 27–28; page 11, lines 1–21; and page 12, lines 24 – 27; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 19, discussions of the recited features of claim 19 can be found at least in the below cited locations of the specification and drawings. Claim 19 recites a system (*e.g.*, 10) for performing engine baseline modeling of an aircraft engine. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The system (*e.g.*, 10) includes means for storing (*e.g.*, 30) aircraft engine data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The system (*e.g.*, 10) further includes

means for preprocessing (*e.g.*, 32) the aircraft engine data into a predetermined format, wherein the preprocessing means (*e.g.*, 32) corrects the aircraft engine data to standard conditions derived for an aircraft engine. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The system (*e.g.*, 10) also includes means for building an engine baseline model (*e.g.*, 34) from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3. The system (*e.g.*, 10) further includes means for evaluating the performance (*e.g.*, 36) of the engine baseline model. *See, e.g., id.* at page 10, lines 27–28; page 11, lines 1–21; and page 12, lines 24–27; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 22, discussions of the recited features of claim 22 can be found at least in the below cited locations of the specification and drawings. Claim 22 recites a method for performing engine baseline modeling. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The method includes storing engine data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The method further includes preprocessing the engine data into a predetermined format. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The method also includes building an engine baseline model from the preprocessed data, wherein the engine baseline model relates engine performance variables as a function of engine operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 30, discussions of the recited features of claim 30 can be found at least in the below cited locations of the specification and drawings. Claim 30 recites a method for performing

engine baseline modeling. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The method includes storing engine data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The method further includes preprocessing the engine data into a predetermined format. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The method also includes building an engine baseline model from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3. The method further includes evaluating the performance of the engine baseline model. *See, e.g., id.* at page 10, lines 27–28; page 11, lines 1–21; and page 12, lines 24–27; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 36, discussions of the recited features of claim 36 can be found at least in the below cited locations of the specification and drawings. Claim 36 recites a method for performing engine baseline modeling of an aircraft engine. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The method includes storing aircraft engine data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The method further includes preprocessing the aircraft engine data into a predetermined format, wherein the preprocessing corrects the aircraft engine data to standard conditions derived for an aircraft engine. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1-16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The method also includes building an engine baseline model from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3. The method further includes evaluating the performance of the engine baseline model. *See, e.g., id.* at page 10, lines 27–28; page 11, lines 1–21; and page 12, lines 24–27; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 39, discussions of the recited features of claim 39 can be found at least in the below cited locations of the specification and drawings. Claim 39 recites a method for performing engine baseline modeling of an aircraft engine. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The method includes storing aircraft engine data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The method further includes preprocessing the aircraft engine data into a predetermined format, wherein the preprocessing corrects the aircraft engine data to standard conditions derived for an aircraft engine. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The method also includes building an engine baseline model from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3. The method further includes validating the engine baseline model. *See, e.g., id.* at page 10, lines 10–18; and page 12, lines 12–19; *see also* FIGS. 2 and 3. The method also includes generating model diagnostics from the engine baseline model. *See, e.g., id.* at page 10, lines 27–28; page 11, lines 1–21; and page 12, lines 24–27; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 40, discussions of the recited features of claim 40 can be found at least in the below cited locations of the specification and drawings. Claim 40 recites a method for performing engine baseline modeling of an engine. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The method includes presenting a user with aircraft engine data (*e.g.*, 48). *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; page 11, lines 23–24; and page 14, lines 9–22; *see also* FIGS. 2, 3 and 4. The method further includes prompting the user (*e.g.*, 50) to select engine performance variables and engine operating conditions from the aircraft engine data to model. *See, e.g., id.* at page 11, lines 24–27;

*see also* FIG. 3. The method further includes preprocessing the engine data into a predetermined format (*e.g.*, 52) in response to the user selection. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The method also includes using a regression to build an engine baseline model from the data (*e.g.*, 60). *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 46, discussions of the recited features of claim 46 can be found at least in the below cited locations of the specification and drawings. Claim 46 recites a computer-readable medium storing computer instructions for instructing a computer system to perform engine baseline modeling. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The computer instructions include storing engine data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The computer instructions further include preprocessing the engine data into a predetermined format. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIG. 2 and 3. The computer instructions also include building an engine baseline model from the preprocessed data, wherein the engine baseline model relates engine performance variables as a function of engine operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 54, discussions of the recited features of claim 54 can be found at least in the below cited locations of the specification and drawings. Claim 54 recites a computer-readable medium storing computer instructions for instructing a computer system to perform engine baseline modeling. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The computer instructions include storing engine data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The

computer instructions further include preprocessing the engine data into a predetermined format. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The computer instructions also include building an engine baseline model from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIG. 2 and 3. The computer instructions further include evaluating the performance of the engine baseline model. *See, e.g., id.* at page 10, lines 27–28; page 11, lines 1–21; and page 12, lines 24–27; *see also* FIG. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 60, discussions of the recited features of claim 60 can be found at least in the below cited locations of the specification and drawings. Claim 60 recites a computer-readable medium storing computer instructions for instructing a computer system to perform engine baseline modeling. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The computer instructions include storing aircraft engine data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The computer instructions further include preprocessing the aircraft engine data into a predetermined format, wherein the preprocessing corrects the aircraft engine data to standard conditions derived for an aircraft engine. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIG. 2 and 3. The computer instructions also include building an engine baseline model from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3. The computer instructions further include evaluating the performance of the engine baseline model. *See, e.g., id.* at page 10, lines 27–28; page 11, lines 1–21; and page 12, lines 24–27; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 63, discussions of the recited features of claim 63 can be found at least in the below cited locations of the specification and drawings. Claim 63 recites a computer-readable medium storing computer instructions for instructing a computer system to perform engine baseline modeling. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The computer instructions include storing aircraft engine data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The computer instructions further include preprocessing the aircraft engine data into a predetermined format, wherein the preprocessing corrects the aircraft engine data to standard conditions derived for an aircraft engine. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIG. 2 and 3. The computer instructions also include building an engine baseline model from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3. The computer instructions further include validating the engine baseline model. *See, e.g., id.* at page 10, lines 10–18; and page 12, lines 12–19; *see also* FIGS. 2 and 3. The computer instructions also include generating model diagnostics from the engine baseline model. *See, e.g., id.* at page 10, lines 27–28; page 11, lines 1–21; and page 12, lines 24–27; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 64, discussions of the recited features of claim 64 can be found at least in the below cited locations of the specification and drawings. Claim 64 recites a computer-readable medium storing computer instructions for instructing a computer system to perform engine baseline modeling. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The computer instructions include presenting a user with aircraft engine data (*e.g.*, 48). *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; page 11, lines 23–24; and page 14, lines 9–22; *see also* FIGS. 2, 3 and 4. The computer instructions further include prompting the user (*e.g.*, 50) to select engine performance variables and engine operating

conditions from the aircraft engine data to model. *See, e.g., id.* at page 11, lines 24–27; *see also* FIG. 3. The computer instructions further include preprocessing the engine data into a predetermined format (*e.g.*, 52) in response to the user selection. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The computer instructions also include using a regression to build an engine baseline model from the data (*e.g.*, 60). *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 70, discussions of the recited features of claim 70 can be found at least in the below cited locations of the specification and drawings. Claim 70 recites a system (*e.g.*, 10) for performing baseline modeling of a process. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1–9; *see also* FIG. 1. The system (*e.g.*, 10) includes a service database (*e.g.*, 30) that contains data relating to the process. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The system (*e.g.*, 10) further includes a preprocessor (*e.g.*, 32) for processing the data into a predetermined format. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27-28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The system (*e.g.*, 10) also includes a baseline modeling component (*e.g.*, 34) that builds a baseline model from the preprocessed data, wherein the baseline model relates process performance variables as a function of process operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIG. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 78, discussions of the recited features of claim 78 can be found at least in the below cited locations of the specification and drawings. Claim 78 recites a method for performing baseline modeling of a process. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1-9; *see also* FIG. 1. The method includes storing process data. *See, e.g., id.* at page 6,

lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The method further includes preprocessing the process data into a predetermined format. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The method also includes building a baseline model from the preprocessed data, wherein the baseline model relates process performance variables as a function of process operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIGS. 2 and 3.

With regard to the aspect of the invention set forth in independent claim 86, discussions of the recited features of claim 86 can be found at least in the below cited locations of the specification and drawings. Claim 86 recites a computer-readable medium storing computer instructions for instructing a computer system to perform baseline modeling of a process. *See, e.g., id.* at page 4, lines 18–27; and page 5, lines 1-9; *see also* FIG. 1. The computer instructions include storing process data. *See, e.g., id.* at page 6, lines 7–28; page 7, lines 1–8; and page 14, lines 9–22; *see also* FIGS. 2 and 4. The computer instructions further include preprocessing the process data into a predetermined format. *See, e.g., id.* at page 7, lines 9–30; page 8, lines 1–16; page 11, lines 9–21, and lines 27–28; and page 12, lines 1–6; *see also* FIGS. 2 and 3. The computer instructions also include building a baseline model from the preprocessed data, wherein the baseline model relates process performance variables as a function of process operating conditions. *See, e.g., id.* at page 8, lines 17–28; page 9, lines 1–29; page 10, lines 1–26; page 11, lines 9–21; and page 12, lines 5–18; *see also* FIG. 2 and 3.

## 6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

**First Ground of Rejection for Review on Appeal:**

Appellants respectfully urge the Board to review and reverse the Examiner's first ground of rejection in which the Examiner rejected independent claims 1, 9, 15, 18, 19, 22, 30, 36, 39, 40, 46, 54, 60, 63, 64, 70, 78 and 86 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,223,143 (hereinafter "Weinstock") in view of U.S.

Patent No. 6,067,486 (hereinafter "Aragones"). Dependent claims 2, 4-6, 8, 10, 12, 13, 16, 20, 23, 25-27, 29, 31, 33, 34, 37, 42, 44, 45, 47, 49-51, 53, 55, 57, 58, 61, 66, 68, 69, 71, 73-75, 77, 79, 81-83, 85, 87, 89-91 and 93 were similarly rejected, and review and reversal of those rejections are also sought.

**Second Ground of Rejection for Review on Appeal:**

The Examiner rejected claims 3, 7, 11, 14, 17, 21, 24, 28, 32, 35, 38, 41, 43, 48, 52, 56, 59, 62, 65, 67, 72, 76, 80, 84, 88 and 92 under 35 U.S.C. § 103(a) as being unpatentable over Weinstock in view of Aragones and in further view of U.S. Patent No. 6,243,696 (hereinafter "Keeler"). Appellants respectfully urge the Board to review and reverse the Examiner's second ground of rejection.

## 7. ARGUMENT

As discussed in detail below, the Examiner has improperly rejected the pending claims. Further, the Examiner has misapplied long-standing and binding legal precedents and principles in rejecting the claims under Section 103. Accordingly, Appellants respectfully request full and favorable consideration by the Board, and reversal of the outstanding rejections.

### A. Ground of Rejection No. 1:

The Examiner rejected independent claims 1, 9, 15, 18, 19, 22, 30, 36, 39, 40, 46, 54, 60, 63, 64, 70, 78 and 86 under 35 U.S.C. 103(a) as being unpatentable over Weinstock in view of Aragones.

**Claims 1, 9, 15, 18, 19, 22, 30, 36, 39, 40, 46, 54, 60, 63, 64, 70, 78 and 86, and claims depending therefrom**

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. Appellants respectfully submit that Weinstock and Aragones, either alone or in combination, do not teach, disclose or suggest all the features recited in independent claims 1, 9, 15, 18, 19, 22, 30, 36, 39, 40, 46, 54, 60, 63, 64, 70, 78 and 86. Specifically

neither reference teaches, discloses or suggests building an engine baseline model for an ideal engine from preprocessed data, *wherein the engine baseline model relates engine performance variables as a function of engine operating conditions*. Accordingly, the combination of the references cannot possibly include these features of the claims, and thus cannot render the claims obvious.

Weinstock discloses a quantitative risk assessment system (QRAS) that builds a risk model of a system for which risk of failure is being assessed, and analyzes the risk of the system corresponding to the risk model. More specifically, in Weinstock, a "baseline" is created based upon simulations run at the lowest level, (i.e., the failure model level). These simulations are saved and stored as the "baseline" (col. 16, lines 57-59). Therefore, the "baseline" created by Weinstock stores simulations, thereby avoiding the need for continually generating scenario simulations and re-constructing and re-simulating all scenarios for each analysis run (col. 24, lines 29-32). The analysis runs then access the "baseline" for risk quantitative computation as well as for ranking of particular risks.

However, the "baseline" disclosed by Weinstock is not equivalent or even similar to the engine baseline model disclosed and claimed in the present patent application. The engine baseline modeling system disclosed and claimed in the present patent application builds an engine baseline model for an ideal engine from preprocessed data and relates engine performance variables as a function of engine operating conditions. The engine baseline model thus developed monitors engine status, predicts future engine behavior, diagnoses faults, determines when an engine performs out of specification, determines the quality of the engine and designs new systems for an engine. *See, e.g.*, Application, page 5, line 29 - page 6, line 6.

There is no disclosure, teaching or even a suggestion in Weinstock to a system or a method for building an engine baseline model for an ideal engine from preprocessed data. Further, Weinstock does not disclose, teach or even suggest that the simulations

stored as the baseline may be used to model ideal engine performance from preprocessed data, and relate performance variables as a function of engine operating conditions. In addition, Appellants have carefully reviewed the sections of Weinstock referenced by the Examiner (Figure 1, item 18-3; Figure 3, item S20; Figure 16, item S1102; col. 3 lines 13-22; col. 9 lines 62-67; col. 10 lines 1-13; col. 20 lines 16-24; and col. 24 lines 22-39) and submit that these sections fail to disclose building an engine baseline model for an ideal engine. One skilled in the art would therefore conclude that Weinstock appears only to teach performing a set of "simulations" and using a "baseline" to store the set of simulations, so that re-constructing and re-simulating all the scenario simulations for each analysis run can be avoided.

Aragones similarly fails to teach this recited feature, and indeed, the Examiner did not rely upon Aragones for teaching of an engine baseline model. Consequently, no combination of the references could render such inventive features obvious. In view of the above-noted distinctions, Appellants submit that claims 1, 9, 15, 18, 19, 22, 30, 36, 39, 40, 46, 54, 60, 63, 64, 70, 78 and 86 are neither the same as, nor in any way taught or suggested by Weinstock or Aragones taken either singly or in combination.

In view of the foregoing deficiencies in the teachings of the prior art, the references cannot establish a *prima facie* case of obviousness of claims 1, 9, 15, 18, 19, 22, 30, 36, 39, 40, 46, 54, 60, 63, 64, 70, 78 and 86. Accordingly, these claims are believed to be clearly patentable over the cited combination. Their reconsideration and allowance is respectfully requested.

Dependent claims 2, 4-6, 8, 10, 12, 13, 16, 20, 23, 25-27, 29, 31, 33, 34, 37, 42, 44, 45, 47, 49-51, 53, 55, 57, 58, 61, 66, 68, 69, 71, 73-75, 77, 79, 81-83, 85, 87, 89-91 and 93 depend from allowable independent claims 1, 9, 15, 18, 19, 22, 30, 36, 39, 40, 46, 54, 60, 63, 64, 70, 78 and 86. Accordingly, these claims are believed to be clearly patentable over the cited combination. Their reconsideration and allowance are requested.

B. **Ground of Rejection No. 2:**

The Examiner rejected claims 3, 7, 11, 14, 17, 21, 24, 28, 32, 35, 38, 41, 43, 48, 52, 56, 59, 62, 65, 67, 72, 76, 80, 84, 88 and 92 under 35 U.S.C. § 103(a) as being unpatentable over Weinstock in view of Aragones and in further view of Keeler.

**Claims 3, 7, 11, 14, 17, 21, 24, 28, 32, 35, 38, 41, 43, 48, 52, 56, 59, 62, 65, 67, 72, 76, 80, 84, 88 and 92.**

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. As summarized above, all of the independent claims are patentable over the combination of Weinstock in view of Aragones. The Keeler reference has been reviewed with respect to the 35 U.S.C. § 103(a) rejection and it fails to obviate the deficiencies of Weinstock in view of Aragones in regards to building an engine baseline model to model the performance of an ideal engine. Accordingly claims 3, 7, 11, 14, 17, 21, 24, 28, 32, 35, 38, 41, 43, 48, 52, 56, 59, 62, 65, 67, 72, 76, 80, 84, 88 and 92 are allowable by virtue of their dependency from allowable base claims 1, 9, 15, 18, 19, 22, 30, 36, 39, 40, 46, 54, 60, 63, 64, 70, 78 and 86. Appellants submit that a *prima facie* case of obviousness is not supported against claims 3, 7, 11, 14, 17, 21, 24, 28, 32, 35, 38, 41, 43, 48, 52, 56, 59, 62, 65, 67, 72, 76, 80, 84, 88 and 92 for rejection under 35 U.S.C. §103(a). Thus, it is respectfully requested that the rejections of these claims under 35 U.S.C. §103(a) be reversed.

**Conclusion**

Appellants respectfully submit that all pending claims are in condition for allowance. However, if the Examiner or Board wishes to resolve any other issues by way of a telephone conference, the Examiner or Board is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

Date: 10/24/2006

PG

Patrick S. Yoder
Reg. No. 37,479
FLETCHER YODER
P.O. Box 692289
Houston, TX 77269-2289
(281) 970-4545

## 8. APPENDIX OF CLAIMS ON APPEAL

**Listing of Claims:**

1. A system for performing engine baseline modeling, comprising:

an engine service database that contains engine data;

a preprocessor for processing the engine data into a predetermined format; and

an engine baseline modeling component that builds an engine baseline model for an ideal engine from the preprocessed data, wherein the engine baseline model relates engine performance variables as a function of engine operating conditions.

2. The system according to claim 1, wherein the preprocessor comprises a data acquisition component that extracts the engine data from the engine service database.

3. The system according to claim 1, wherein the preprocessor comprises a data scrubbing component that cleans the engine data.

4. The system according to claim 1, wherein the preprocessor comprises a data segmenting component that segments the engine data into a plurality of groups.

5. The system according to claim 1, wherein the engine baseline model is a regression model.

6. The system according to claim 1, wherein the engine baseline modeling component comprises a metric component that validates the engine baseline model.

7. The system according to claim 1, wherein the engine baseline modeling component comprises a heuristics component that generates rules for cleaning the preprocessed data.

8. The system according to claim 1, further comprising a model diagnostics component that evaluates the performance of the engine baseline model.

9. A system for performing engine baseline modeling, comprising:

an engine service database that contains engine data;

a preprocessor for processing the engine data into a predetermined format;

an engine baseline modeling component that builds an engine baseline model for an ideal engine from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions; and

a model diagnostics component that evaluates the performance of the engine baseline model.

10. The system according to claim 9, wherein the preprocessor comprises a data acquisition component that extracts the engine data from the engine service database.

11. The system according to claim 9, wherein the preprocessor comprises a data scrubbing component that cleans the engine data.

12. The system according to claim 9, wherein the preprocessor comprises a data segmenting component that segments the plurality of engine data into a plurality of groups.

13. The system according to claim 9, wherein the engine baseline modeling component comprises a metric component that validates the engine baseline model.

14. The system according to claim 9, wherein the engine baseline modeling component comprises a heuristics component that generates rules for cleaning the preprocessed data.

15. A system for performing engine baseline modeling of an aircraft engine, comprising:

an engine service database that contains aircraft engine data;

a preprocessor for processing the aircraft engine data into a predetermined format, wherein the preprocessor corrects the aircraft engine data to standard conditions derived for an aircraft engine;

an engine baseline modeling component that builds an engine baseline model for an ideal engine from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions; and

a model diagnostics component that evaluates the performance of the engine baseline model.

16. The system according to claim 15, wherein the engine baseline modeling component comprises a metric component that validates the engine baseline model.

17. The system according to claim 15, wherein the engine baseline modeling component comprises a heuristics component that generates rules for cleaning the preprocessed data.

18. A system for performing engine baseline modeling of an aircraft engine, comprising:

an engine service database that contains aircraft engine data;

a preprocessor for processing the aircraft engine data into a predetermined format, wherein the preprocessor corrects the aircraft engine data to standard conditions derived for an aircraft engine;

an engine baseline modeling component that builds an engine baseline model for an ideal engine from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating

conditions, and the engine baseline modeling component comprising a metric component to validate the engine baseline model; and

a model diagnostics component that evaluates the performance of the engine baseline model.

19. A system for performing engine baseline modeling of an aircraft engine, comprising:

means for storing aircraft engine data;

means for preprocessing the aircraft engine data into a predetermined format, wherein the preprocessing means corrects the aircraft engine data to standard conditions derived for an aircraft engine;

means for building an engine baseline model for an ideal engine from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions; and

means for evaluating the performance of the engine baseline model.

20. The system according to claim 19, wherein the building means comprises means for validating the engine baseline model.

21. The system according to claim 19, wherein the building means comprises means for generating rules for cleaning the preprocessed data.

22. A method for performing engine baseline modeling, comprising:

storing engine data;

preprocessing the engine data into a predetermined format; and

building an engine baseline model for an ideal engine from the preprocessed data, wherein the engine baseline model relates engine performance variables as a function of engine operating conditions.

23. The method according to claim 22, wherein the preprocessing comprises extracting the engine data from an engine service database.

24. The method according to claim 22, wherein the preprocessing comprises cleaning the engine data.

25. The method according to claim 22, wherein the preprocessing comprises segmenting the engine data into a plurality of groups.

26. The method according to claim 22, wherein the engine baseline model is a regression model.

27. The method according to claim 22, further comprising validating the engine baseline model.

28. The method according to claim 22, further comprising generating rules for cleaning the preprocessed data.

29. The method according to claim 22, further comprising evaluating the performance of the engine baseline model.

30. A method for performing engine baseline modeling, comprising:

storing engine data;

preprocessing the engine data into a predetermined format;

building an engine baseline model for an ideal engine from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions; and

evaluating the performance of the engine baseline model.

31. The method according to claim 30, wherein the preprocessing comprises extracting the engine data from an engine service database.

32. The method according to claim 30, wherein the preprocessing comprises cleaning the engine data.

33. The method according to claim 30, wherein the preprocessing comprises segmenting the engine data into a plurality of groups.

34. The method according to claim 30, further comprising validating the engine baseline model.

35. The method according to claim 30, further comprising generating rules for cleaning the preprocessed data.

36. A method for performing engine baseline modeling of an aircraft engine, comprising:

storing aircraft engine data;

preprocessing the aircraft engine data into a predetermined format, wherein the preprocessing corrects the aircraft engine data to standard conditions derived for an aircraft engine;

building an engine baseline model for an ideal engine from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions; and

evaluating the performance of the engine baseline model.

37. The method according to claim 36, further comprising validating the engine baseline model.

38. The method according to claim 36, further comprising generating rules for cleaning the preprocessed data.

39. A method for performing engine baseline modeling of an aircraft engine, comprising:

storing aircraft engine data;

preprocessing the aircraft engine data into a predetermined format, wherein the preprocessing corrects the aircraft engine data to standard conditions derived for an aircraft engine;

building an engine baseline model for an ideal engine from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions;

validating the engine baseline model; and

generating model diagnostics from the engine baseline model.

40. A method for performing engine baseline modeling of an engine, comprising:

presenting a user with aircraft engine data;

prompting the user to select engine performance variables and engine operating conditions from the aircraft engine data to model;

in response to the user selection, preprocessing the engine data into a predetermined format; and

using a regression to build an engine baseline model for an ideal engine from the data.

41. The method according to claim 40, wherein the preprocessing comprises cleaning the engine data.

42. The method according to claim 40, further comprising validating the engine baseline model.

43. The method according to claim 40, further comprising generating rules for cleaning the preprocessed data.

44. The method according to claim 40, further comprising evaluating the performance of the engine baseline model.

45. The method according to claim 44, further comprising displaying results from the evaluation to the user.

46. A computer-readable medium storing computer instructions for instructing a computer system to perform engine baseline modeling, the computer instructions comprising:

storing engine data;

preprocessing the engine data into a predetermined format; and

building an engine baseline model for an ideal engine from the preprocessed data, wherein the engine baseline model relates engine performance variables as a function of engine operating conditions.

47. The computer-readable medium according to claim 46, wherein the preprocessing comprises instructions for extracting the engine data from an engine service database.

48. The computer-readable medium according to claim 46, wherein the preprocessing comprises instructions for cleaning the engine data.

49. The computer-readable medium according to claim 46, wherein the preprocessing comprises instructions for segmenting the engine data into a plurality of groups.

50. The computer-readable medium according to claim 46, wherein the engine baseline model is a regression model.

51. The computer-readable medium according to claim 46, further comprising instructions for validating the engine baseline model.

52. The computer-readable medium according to claim 46, further comprising instructions for generating rules for cleaning the preprocessed data.

53. The computer-readable medium according to claim 46, further comprising instructions for evaluating the performance of the engine baseline model.

54. A computer-readable medium storing computer instructions for instructing a computer system to perform engine baseline modeling, the computer instructions comprising:

storing engine data;

preprocessing the engine data into a predetermined format;

building an engine baseline model for an ideal engine from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions; and

evaluating the performance of the engine baseline model.

55. The computer-readable medium according to claim 54, wherein the preprocessing comprises instructions for extracting the engine data from an engine service database.

56. The computer-readable medium according to claim 54 wherein the preprocessing comprises instructions for cleaning the engine data.

57. The computer-readable medium according to claim 54, wherein the preprocessing comprises instructions for segmenting the engine data into a plurality of groups.

58. The computer-readable medium according to claim 54, further comprising instructions for validating the engine baseline model.

59. The computer-readable medium according to claim 54, further comprising instructions for generating rules for cleaning the preprocessed data.

60. A computer-readable medium storing computer instructions for instructing a computer system to perform engine baseline modeling, the computer instructions comprising:

storing aircraft engine data;

preprocessing the aircraft engine data into a predetermined format, wherein the preprocessing corrects the aircraft engine data to standard conditions derived for an aircraft engine;

building an engine baseline model for an ideal engine from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions; and

evaluating the performance of the engine baseline model.

61. The computer-readable medium according to claim 60, further comprising instructions for validating the engine baseline model.

62. The computer-readable medium according to claim 60, further comprising instructions for generating rules for cleaning the preprocessed data.

63. A computer-readable medium storing computer instructions for instructing a computer system to perform engine baseline modeling, the computer instructions comprising:

storing aircraft engine data;

preprocessing the aircraft engine data into a predetermined format, wherein the preprocessing corrects the aircraft engine data to standard conditions derived for an aircraft engine;

building an engine baseline model for an ideal engine from the preprocessed data using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions;

validating the engine baseline model; and

generating model diagnostics from the engine baseline model.

64. A computer-readable medium storing computer instructions for instructing a computer system to perform engine baseline modeling, the computer instructions comprising:

presenting a user with aircraft engine data;

prompting the user to select engine performance variables and engine operating conditions from the aircraft engine data to model;

in response to the user selection, preprocessing the engine data into a predetermined format; and

using a regression to build an engine baseline model for an ideal engine from the preprocessed data.

65. The computer-readable medium according to claim 64, wherein the preprocessing comprises instructions for cleaning the engine data.

66. The computer-readable medium according to claim 64, further comprising instructions for validating the engine baseline model.

67. The computer-readable medium according to claim 64, further comprising instructions for generating rules for cleaning the preprocessed data.

68. The computer-readable medium according to claim 64, further comprising instructions for evaluating the performance of the engine baseline model.

69. The computer-readable medium according to claim 68, further comprising instructions for displaying results from the evaluation to the user.

70. A system for performing baseline modeling of a process, comprising:

a service database that contains data relating to the process;

a preprocessor for processing the data into a predetermined format; and

a baseline modeling component that builds a baseline model for an ideal engine from the preprocessed data, wherein the baseline model relates process performance variables as a function of process operating conditions.

71. The system according to claim 70, wherein the preprocessor comprises a data acquisition component that extracts the data from the service database.

72. The system according to claim 70, wherein the preprocessor comprises a data scrubbing component that cleans the data.

73. The system according to claim 70, wherein the preprocessor comprises a data segmenting component that segments the data into a plurality of groups.

74. The system according to claim 70, wherein the baseline model is a regression model.

75. The system according to claim 70, wherein the baseline modeling component comprises a metric component that validates the baseline model.

76. The system according to claim 70, wherein the baseline modeling component comprises a heuristics component that generates rules for cleaning the preprocessed data.

77. The system according to claim 70, further comprising a model diagnostics component that evaluates the performance of the baseline model.

78. A method for performing baseline modeling of a process, comprising:

storing process data;

preprocessing the process data into a predetermined format; and

building a baseline model for an ideal process from the preprocessed data, wherein the baseline model relates process performance variables as a function of process operating conditions.

79. The method according to claim 78, wherein the preprocessing comprises extracting the process data from a service database.

80. The method according to claim 78, wherein the preprocessing comprises cleaning the process data.

81. The method according to claim 78, wherein the preprocessing comprises segmenting the process data into a plurality of groups.

82. The method according to claim 78, wherein the process baseline model is a regression model.

83. The method according to claim 78, further comprising validating the baseline model.

84. The method according to claim 78, further comprising generating rules for cleaning the preprocessed data.

85. The method according to claim 78, further comprising evaluating the performance of the baseline model.

86. A computer-readable medium storing computer instructions for instructing a computer system to perform baseline modeling of a process, the computer instructions comprising:

storing process data;

preprocessing the process data into a predetermined format; and

building a baseline model for an ideal engine from the preprocessed data, wherein the baseline model relates process performance variables as a function of process operating conditions.

87. The computer-readable medium according to claim 86, wherein the preprocessing comprises instructions for extracting the process data from a service database.

88. The computer-readable medium according to claim 86, wherein the preprocessing comprises instructions for cleaning the process data.

89. The computer-readable medium according to claim 86, wherein the preprocessing comprises instructions for segmenting the process data into a plurality of groups.

90. The computer-readable medium according to claim 86, wherein the baseline model is a regression model.

91. The computer-readable medium according to claim 86, further comprising instructions for validating the baseline model.

92. The computer-readable medium according to claim 86, further comprising instructions for generating rules for cleaning the preprocessed data.

93. The computer-readable medium according to claim 86, further comprising instructions for evaluating the performance of the baseline model.

## 9. EVIDENCE APPENDIX

None.

## 10. RELATED PROCEEDINGS APPENDIX

None.